

Amendments to the Claims

The following is a complete listing of the claims that replaces all previous versions:

1. (Original) An apparatus, comprising  
a lens having a light entrance end forming a recess;  
a heat sink having an end portion facing the recess; and  
a light source positioned to transmit light via the recess into the lens in thermal communication with the heat sink;  
wherein heat generated by the light source is conducted to the heat sink.
2. (Original) The apparatus of claim 1, wherein the heat further comprises a metallic film formed a surface thereof.
3. (Original) The apparatus of claim 2, wherein the metallic film is formed on the end portion of the heat sink facing the recess.
4. (Original) The apparatus of claim 2, wherein the light source is attached to the metallic film formed on the heat sink.
5. (Original) The apparatus of claim 1, wherein the light source comprises an LED.

6. (Original) The apparatus of claim 1, wherein the light source comprises a plurality of LEDs.
7. (Original) The apparatus of claim 1, further comprising a terminal board in communication with the light source.
8. (Original) The apparatus of claim 7, wherein the terminal board further comprises a metallic film formed a surface thereof.
9. (Original) The apparatus of claim 8, wherein the light source is electrically connected to the metallic film formed on the terminal board
10. (Original) The apparatus of claim 7, wherein the terminal board comprises a conductive pad formed on a surface thereof, and wherein electrical current is supplied to the light source through the terminal board via the conductive pad.
11. (Original) The apparatus of claim 7, wherein the terminal board comprises a plurality of conductive pads formed on a surface thereof.
12. (Original) The apparatus of claim 11, wherein the terminal board comprises

three conductive pads spaced 120° apart.

13. (Original) The apparatus of claim 1, wherein the heat sink forms an electrical contact of the light source.

14. (Original) The apparatus of claim 1, wherein the light source is carried by the end portion of the heat sink.

15. (Original) The apparatus of claim 1, wherein the light source is configured to emit blue light forwardly toward a concave wall defined by the lens.

16. (Original) The apparatus of claim 1, wherein the lens has a rearward portion extending about the recess, and defining an outer surface that tapers in a direction toward the heat sink.

17. (Original) The apparatus of claim 1, wherein the recess is re-entrant into the lens, and the lens has a rearward wall that is concave toward the recess.

18. (Original) The apparatus of claim 1, wherein the recess contains at least one of the following:

- i) U.V. curable optical plastic material having an index of refraction

substantially the same as that of the lens; and

- ii) light transmitting plastic material.

19. (Original) The apparatus of claim 1, wherein the light source is at the end portion of the heat sink that faces the recess, and in thermal communication with the end portion.

20. (Original) The apparatus of claim 1, wherein the lens and heat sink are coaxial.

21. (Original) The apparatus of claim 1, further comprising a holder into which the light entrance end of the lens is received, the holder extending about the recess.

22. (Original) The apparatus of claim 21, wherein the heat sink comprises a body that projects endwise into the holder.

23. (Original) The apparatus of claim 21, wherein the holder defines an inner wall that tapers in a direction toward the heat sink, the lens defining an outer surface that also tapers toward the heat sink and extends about the recess and in adjacent relation to the holder inner wall.

24. (Original) The apparatus of claim 21, further comprising wiring extending between the holder and the heat sink, to supply electrical current to the light source which comprises

an LED, or an array of LEDs.

25. (Original) The apparatus of claim 21, wherein the lens, heat sink and holder are coaxial.

26. (Original) The apparatus of claim 21, further comprising a light transmitting member transmitting light from the lens, in a direction away from the recess.

27. (Original) The apparatus of claim 21, wherein the lens is a TIR lens.

28. (Original) The apparatus of claim 27, further comprising a housing extending about the heat sink in coaxial relation therewith, the holder having an end portion received into the housing.

29. (Original) The apparatus of claim 21, wherein the heat sink is a primary heat sink, and there being a secondary heat sink at an end of the primary heat sink opposite the recess.

Claims 30-33 (Canceled)

34. (New) A compact illuminator assembly comprising:  
a lens having a light entrance end forming a recess, the lens being a non-

imaging lens or a total internal reflection (TIR) lens configured to radiate collimated optical radiation therethrough;

a heat sink having an end portion facing the lens recess;

a lens holder including a front portion extending about the lens recess, the front portion defining a first cavity for receiving the light entrance end of the lens, and a rear portion defining a second cavity for receiving the end portion of the heat sink therein, the lens holder defining an inner wall therein tapering to a smaller diameter in a direction from the front portion of the lens holder to the rear portion of the lens holder;

the lens further including a rearward portion extending about the lens recess and defining an outer surface tapering to a smaller diameter in the direction of the heat sink, the tapered outer surface of the lens further extending into the rear portion of the lens holder and the tapered outer surface of the lens being oriented in adjacent relation to the tapered inner wall of the lens holder; and,

a light source positioned on the end portion of the heat sink facing the light entrance end of the lens to transmit light via the lens recess into the lens, the light source being in thermal communication with the heat sink wherein heat generated by the light source is conducted to the heat sink.

35. (New) The illuminator assembly of Claim 34, wherein the heat sink further comprises a metallic film formed on a surface thereof.

36. (New) The illuminator assembly of Claim 35, wherein the metallic film is formed on the end portion of the heat sink facing the recess.

37. (New) The illuminator assembly of Claim 35, wherein the light source is attached to the metallic film formed on the end portion of the heat sink.

38. (New) The illuminator assembly of Claim 34, wherein the light source comprises an LED.

39. (New) The illuminator assembly of Claim 34, wherein the light source comprises a plurality of LEDs.

40. (New) The illuminator assembly of Claim 34, further comprising an annular interface board located on the end portion of the heat sink, the light source being positioned in a central aperture defined by the annular interface board.

41. (New) The illuminator assembly of Claim 40, further comprising a metallic film formed on the interface board, wherein the light source is electrically connected to the metallic film formed on the interface board.

42. (New) The illuminator assembly of Claim 40, wherein the interface board

comprises a conductive pad formed on a surface thereof, and wherein electrical current is supplied to the light source through the interface board via the conductive pad.

43. (New) The illuminator assembly of Claim 40, wherein the interface board comprises a plurality of conductive pads formed on a surface thereof.

44. (New) The illuminator assembly of Claim 43, wherein the interface board comprises three conductive pads spaced 120° apart.

45. (New) The illuminator assembly of Claim 34, wherein the heat sink forms an electrical contact of the light source.

46. (New) The illuminator assembly of Claim 34, wherein the light source is configured to emit blue light forwardly toward the lens recess.

47. (New) The illuminator assembly of Claim 34, wherein the lens recess is re-entrant into the lens, and the lens includes a rearward wall that is concave toward the lens recess.

48. (New) The illuminator assembly of Claim 34, wherein the lens recess contains at least one of the following:

- i) a curable optical plastic material having an index of refraction



substantially the same as that of the lens; or

- ii) a light transmitting plastic material.

49. (New) The illuminator assembly of Claim 34, wherein the light source is in thermal communication with the end portion of the heat sink.

50. (New) The illuminator assembly of Claim 34, wherein the lens and the heat sink are coaxially aligned.

51. (New) The illuminator assembly of Claim 34, wherein the heat sink comprises a body that projects endwise into the lens holder.

52. (New) The illuminator assembly of Claim 34, further comprising wiring extending between the lens holder and the heat sink to supply electrical current to the light source which comprises an LED or an array of LEDs.

53. (New) The illuminator assembly of Claim 34, wherein the lens, the heat sink, and the lens holder are coaxially aligned.

54. (New) The illuminator assembly of Claim 34, further comprising a light transmitting member transmitting light from the lens in a direction away from the recess.

55. (New) The illuminator assembly of Claim 34, further comprising a housing extending about the heat sink in coaxial relation therewith, the lens holder having an end portion received into the housing.

56. (New) The illuminator assembly of Claim 34, wherein the heat sink is a primary heat sink, and there being a secondary heat sink in thermal communication with the primary heat sink.